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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

William J. Furnas : Art Unit: 2678
Serial No: 09/318,249 : Examiner: Thanh X. Luu
Filed: May 25, 1999 : Docket No: 5298-18
For: CONTAINER INSPECTION MACHINE

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Jean L. Gianfriddo

Sir:

BRIEF ON APPEAL

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Account Number 50-0696. Three copies of this brief are submitted.

(1) Real Party In Interest

This application has been assigned to Emhart Glass SA which is
a wholly owned subsidiary of Bucher Industries SA.

(2) Related Appeals and Interferences

This is the second appeal in the case. Other than this prior
appeal, no other appeal or interference relates to this subject
matter.

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(3) Status of the Claims

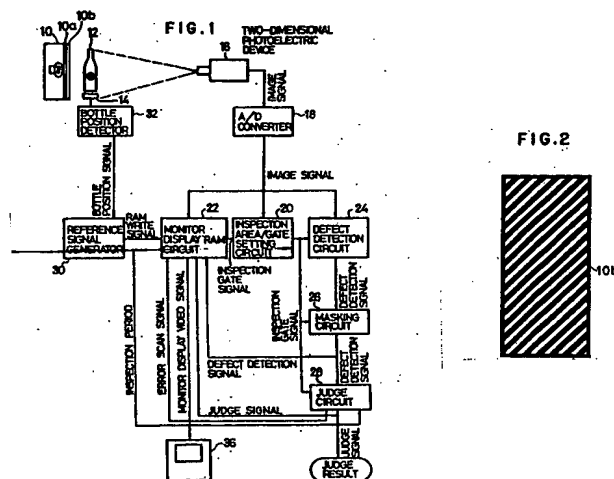
This appeal is from a final rejection dated April 7, 2005 of independent claims 1 and 2. Claims 3-7 are objected to and would be allowed if rewritten in independent form.

(4) Status of Amendments

No amendment was filed responding to the final rejection.

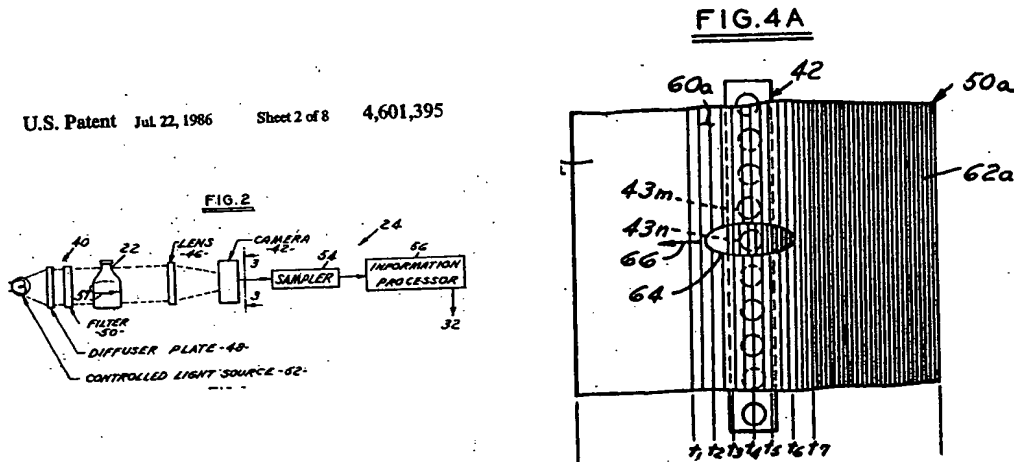
(5) Summary of Invention

This invention concerns the identification of defects in the wall of a glass bottle. Generally, light is directed at a bottle and when a defect, such as a stone, is present, the light will act differently at the defect than when directed to normal glass. This difference in light action can be observed to identify the defect. One technique that has been developed is to take the light from a light source and then first direct the light through a diffusion plate to diffuse the light and then pass the diffused light through a slant slit-plate which splits the light into dark and light stripes. Cited U.S. Patent No. 5,004,909 (Fukuchi), discloses such a design in Figures 1 and 2 presented below. In Figure 1, 10 is the light bulb, 10a is the diffuser plate and 10b is the slant slit-plate. Figure 2 shows the slant slit-plate.



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A variation of this approach is to use a filter plate 50a shown in Figure 4A of U.S. Patent No. 4,601,395 (Juvinal) presented below.



The present invention does not follow this well-defined path. The inventor herein instead uses the light bulb itself to create the striping. The light bulb 16 defines a large area of light with a large number of vertical rows of L.E.D.s 18 (page 2, line 23). Individual timers 20 are connected to each vertical row of L.E.D.'s 18 so that when the rows are turned on, the timers will time out at selected times ($0T$, $.2T$, $.4T$, $.6T$, and $.8T$) of an imaging cycle (the time T required for the row of L.E.D.'s to turn fully on and appear white) with light intensity being a function of the time on (page 2, line 31).

(6) Issues

Is the Examiner in error rejecting claim 1 as anticipated by Juvinal et al. (U.S. Patent No. 4,601,395).

(7) Grouping of the Claims

This appeal will deal only with the rejection of claim 1.

(8) Argument

In the prior appeal in this case, the board interpreted the phrase "light source" to include the Juvinall bulb along with the associated Juvinall filter. When "light source" is interpreted in this manner, Juvinall had a light source which defined a stripped beam of light which was directed at the object to be inspected.

To more properly define the invention herein, applicant filed new claims which are presented in the appendix. The examiner has rejected new claim 1 as being anticipated by Juvinall. Juvinall discloses a light bulb that has a single uniform brightness level.

It is shown as a single light bulb. The associated Juvinall filter processes the light so that it is discharged directed to the object being inspected as a number of black and white parallel stripes. The basic teaching in Juvinall is that the light emanating from the light bulb (whether it be a bank of LED's or parallel florescent tubes) is intended to be uniform in intensity and is treated as such.

Applicant has amended Claim 1 to define the invention as the bulb and the control of the bulb itself to define the desired pattern of light directed past the object being inspected.. Claim 1 accordingly provides in part:

"the inspection station including

* * *,

a light source, on the other side of the conveyor, for imaging the bottle on said CCD camera image,

energy controlling means for operating said light source to emit light energy for defining light intensities varying between a

minimum brightness level that will permit the identification of a light blocking defect and a maximum brightness level, the brightness level varying spatially, cyclically, and continuously at a rate of change which is less than a rate of change that would be identified as a defect,"

Claim 1 defines a light source and "energy controlling means for operating said light source to emit light energy for defining light intensities varying between" The application discloses this as parallel rows of LED's and structure for setting the "on" time of the individual rows of LED's as disclosed.

Juvinall has a uniform intensity for its light bulb. There is no means in Juvinall to control the energy to this light bulb so that the intensity can be varied across the light bulb in the manner claimed. If the light source in Juvinall is the bulb plus the filter, than nothing operates on this light source to effect the desired light pattern. In Juvinall, the light source itself defines the light pattern.

Claim 1 clearly defines the energy controlling means as not a part of the light source. As previously interpreted on appeal, the light source in Juvinall includes the bulb and the filter. Nothing operates this Juvinall light source to define various light intensities. In Juvinall, it is the light source itself (the bulb and the filter) that defines this light pattern.

In claim 1, the light pattern is controlled by the energy controlling means which operates the bulb in a way to create the desired pattern.

The Examiner now argues that the bulb, not the bulb and the filter in Juvinall is the light source and that the filter and the light bulb intensity controller in Juvinall are the "energy controlling means". He states that: "...Juvinall ... disclose(s) ... energy controlling means for operating (48,50 (the filter), controller for 52 (the light bulb), see "controlled light source") the light source to emit light energy for defining light intensities varying" As already pointed out, making the

Juvinall bulb brighter or darker in no way defines the desired light pattern. There is no pattern in the Juvinall bulb. The bulb just gets brighter or darker.


Claim 1 requires that the "energy controlling means" operates "the light source" to define the pattern. The filter in Juvinall does not operate the Juvinall light bulb. The Juvinall filter is passive. It simply receives light from the Juvinall light bulb. The light bulb controller in Juvinall merely changes the intensity of a uniformly illuminated bulb.

Whether the light source in Juvinall is the bulb or the bulb and the filter, Juvinall cannot read on claim 1.

Juvinall, accordingly, does not teach the claimed invention and the Examiner's rejection under section 102 is in error and should be reversed.

Accordingly, the examiner's rejection of claim 1, should be presently reversed.

Respectfully submitted,

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APPENDIX

1. A machine for inspecting the wall of a bottle comprising a conveyor for supporting a bottle at an inspection station, the inspection station including
 - a CCD camera on one side of the conveyor having a camera image,
 - a light source, on the other side of the conveyor, for imaging the bottle on said CCD camera image,
 - energy controlling means for operating said light source to emit light energy for defining light intensities varying between a minimum brightness level that will permit the identification of a light blocking defect and a maximum brightness level, the brightness level varying spatially, cyclically, and continuously at a rate of change which is less than a rate of change that would be identified as a defect,
 - computer means for analyzing the camera image by comparing neighboring pixels to determine the rate of change in brightness level to identify defects where the rate of change exceeds a defined value.
2. A machine for inspecting the wall of a bottle according to claim 1, wherein said light source comprises a plurality of L.E.D. rows.
3. A machine for inspecting the wall of a bottle according to claim 2, wherein said plurality of L.E.D. rows define a plurality of row groups each including a row having a maximum brightness level, a row having a minimum brightness level, at least one row intermediate said row having said maximum brightness level and said row having said minimum brightness level having a brightness level between said minimum brightness level and said maximum brightness level, and at least one row on the side of the row

having the minimum brightness level remote from said row having the maximum brightness level having a brightness level between the minimum brightness level and the maximum brightness level.

4. A machine for inspecting the profile and wall of a bottle according to claim 3, wherein there are a plurality of vertical L.E.D. rows intermediate the row having the minimum brightness